

REMARKS

This Reply is made in response to the Office Action mailed April 4, 2003.

The Amendments

New dependent claims 18 and 19 are added. These claims are supported by the disclosure at page 6, lines 1-12, for example.

The Election of Species Requirement

The election of species requirement and allegation of lack of unity of invention are based on the alleged anticipation or obviousness of the encased monolithic sorbent of claim 1 over the prior art. Although applicants disagree with this basis (for the previously stated reasons which are incorporated herein by reference), it is believed to be rendered moot since it should now be clear that the encased monolithic sorbent of claim 1 is novel and nonobvious over the prior art, for the reasons which follow. Thus, the basis for the alleged lack of unity of invention is removed and the claims should all be examined together.

The Rejections under 35 U.S.C. § 103

The rejection of claims 1, 2 and 16 under 35 U.S.C. § 103, as being obvious over WO 94/19687 alone or in view of FR 2654835A, and of claim 4 under 35 U.S.C. § 103 over WO 94/19687 further in view of Nakanishi (U.S. Patent No. 5,624,875), are respectfully traversed.

The discussion of the prior art in the Amendment with RCE Filing made February 14, 2003, remains applicable in traversing the rejections and is incorporated herein by reference. In the following arguments, portions are reiterated for emphasis.

Applicants remain of the position that the art, including the Matsushita '538 patent, does not teach or suggest that the Teflon sleeve as used in WO 94/19687 would be pressure-resistant. As part of the evidence that the Teflon sleeve of WO '687 would not be considered "pressure-resistant" a Declaration under 37 C.F.R. § 1.132 by Dr. Lubda was previously provided. The Office Action stated that the declaration was not convincing because the thickness of the Teflon sleeves tested was not shown. Attached is a supplemental Declaration under 37 C.F.R. § 1.132 of Dr. Lubda. The new declaration supplements the previous one, attesting that the thickness of the Teflon sleeve in the previous experiments was 0.15 mm. Although the reference does not specifically disclose the thickness of the Teflon sleeve used therein, Figure 1 of the reference supports that this is a very thin sleeve. Further, that WO '687 requires an outer pressure-resistant covering, i.e., the Druckmantel (3), makes evident that the Teflon sleeve is not pressure resistant. Why would the reference add an outer pressure-resistant covering if the Teflon sleeve was already pressure-resistant? The combined Lubda declarations further evidence that the Teflon sleeve of WO '687 is not "pressure-resistant" in the context of use for encasing a monolithic sorbent. The Teflon sleeves failed at pressure significantly below the typical minimum operating pressures used in the monolithic sorbent art.

The new Lubda declaration provides additional evidence also. Other tests were conducted using a polyvinylidene fluoride polymer (PVDF) as the cladding material for a monolith column. The cladding had a wall thickness of 1.75 mm. This material was also not pressure-resistant at the pressures typical for use in a monolithic sorbent application.

These failures are contrasted to the advantageous use of the encased monolithic sorbent of the invention at pressures of 100 bar and more, even up to 260 bar.

The prior art considered as a whole, rather than suggesting applicants' invention, directs away from the invention. The '538 Matsushita patent discloses that the pressure-resistant column is of stainless steel, Teflon, acrylic resin, polyethylene or glass. If the column is of Teflon in the '538 patent, it would have to be of a different structure than in WO '687. For example, it would have to be a much thicker layer of Teflon. Or it could be provided with a rigid, e.g., metal, covering as in WO '687, in which case it is the covering, not the Teflon, which provides the pressure-resistance. One of ordinary skill in the art would know that such a pressure resistant column could not be provided merely with the thin Teflon sleeve such as shown in WO 94/19687 since a thin layer of Teflon does not provide a rigid structure. This is clearly shown in WO '687 by the fact that an outer pressure-resistant covering, i.e., the Druckmantel (3), must be provided around the thin Teflon coating to provide a pressure-resistant structure. WO '687 specifically states that it is this thicker outer covering, not the Teflon sleeve, which provides the pressure-resistance. The German word "Druck" refers to pressure. This is also pointed out on page 1 of applicants' specification. WO '687 also discloses an embodiment wherein a liquid is filled in a gap (i.e., the "spalt" element 8) between the Teflon coating and the pressure-resistant covering to ensure a close fit of the Teflon sleeve to the sorbent. This would not be possible unless the Teflon sleeve was flexible. Thus, further evidencing that the Teflon sleeve in WO '687 is not pressure resistant.

That the flexible Teflon sleeves of the prior art will show some minimal amount of pressure-resistance is not supportive of the rejection. Obviously, any material will exhibit some extent of pressure-resistance. But the term "pressure-resistant" in claim 1 cannot be considered in a vacuum; it must be considered in the context of the disclosure as a whole and in the context of the knowledge of one of ordinary skill in this art, i.e., in encasing a monolithic sorbent. WO '687 itself clearly evidences that the Teflon sleeve disclosed therein

was not considered “pressure-resistant” otherwise WO ’687 would not require the additional pressure-resistant covering, i.e., the Druckmantel (3).

In the Office Action, it is further alleged that it is “common knowledge” that PEEK tubing material is an impermeable pressure-resistant plastic casing for a chromatography column. There is no basis, however, for such allegation. This is clearly an impermissible hindsight application of applicants’ own teachings. Nothing in the prior art suggests such an application for PEEK tubing.

The Office Action further refers to FR ‘835 reference as supporting the rejection. It is alleged to be obvious to replace the Teflon sleeve in WO ’687 with the PEEK tubing of FR ‘835. The new declaration of Dr. Lubda and a new Declaration under 37 C.F.R. § 1.132 by Dr. Harders provide translated portions of the actual text of FR ‘835, rather than the vague Abstract. Also, a copy of the full French-language document is attached. From the full document and translated portions, it is clear that the PEEK tubing used in FR ‘835 is expanded and deformed under internal pressure and then the pressure lowered to compress the particulate sorbent material therein. Thus, it is clear that, contrary to being pressure-resistant, the thin PEEK tubing used in FR ‘835, i.e., 0.65 to 0.80 mm wall thickness, is deformable by pressure. Thus, under pressure, the tubing will separate from the walls of the sorbent material creating unwanted channels for fluid flow along the walls rather than through the sorbent material. One of ordinary skill in the art would clearly consider this undesirable and not of use for a monolithic sorbent column.

The combination of Nakanishi with the WO ’687 and/or FR ‘835 reference also fails to suggest the claimed invention. Nakanishi was cited for its teachings regarding pore types and size of a sorbent material. As applicants have previously established, Nakanishi teaches nothing about encasing such a sorbent material and particularly not encasing in a “liquid-

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impermeable manner by a pressure-resistant plastic casing." Thus, Nakanishi provides no motivation to modify the encasing structure of WO '687 or FR '835, which fail to suggest the claimed invention, as established above.

For all of the above reasons, it is urged that the rejections under 35 U.S.C. § 103 should be withdrawn.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,



John A. Sopp, Reg. No. 33,103
Attorney for Applicants

MILLEN, WHITE, ZELANO &
BRANIGAN, P.C.

Arlington Courthouse Plaza 1, Suite 1400
2200 Clarendon Boulevard
Arlington, Virginia 22201
Telephone: (703) 243-6333
Facsimile: (703) 243-6410

Attorney Docket No.: MERCK-2047

Date: October 6, 2003

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